

NOAA Technical Memorandum NMFS



JUNE 1989

CATALOG OF THE SYNOPTIC COLLECTION OF MARINE MAMMAL OSTEOLOGICAL SPECIMENS AT THE SOUTHWEST FISHERIES CENTER

William F. Perrin
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NOAA-TM-NMFS-SWFC-130

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
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NOAA Technical Memorandum NMFS

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U.S. DEPARTMENT OF COMMERCE

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National Marine Fisheries Service

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INTRODUCTION

The collection of marine mammal specimens at the Southwest Fisheries Center began in 1967 with the skull of a common dolphin, *Delphinus delphis*, extracted from a carcass that washed up on the beach below the laboratory. The late Carl L. Hubbs helped retrieve the specimen and gave advice on how to prepare it. The Center has maintained a "salvage program" at various levels since that time, and specimens have continued to accumulate. The first dolphin skull was soon joined by the skulls and skeletons of dolphins (mainly *Stenella* spp.) killed in the tuna purse-seine fishery in the eastern tropical Pacific (Perrin, 1968). The trickle of specimens from the fishery turned to a torrent in the 1970s when a formal research program on the "tuna/porpoise" problem was launched and taxonomic work begun to sort out the species and populations of dolphins involved in the fishery. Most of the specimens for the taxonomic studies (several thousand) were eventually placed in major museums (as were most of the specimens retrieved from the beaches), but representative series of the major species and at least one specimen of each species encountered were retained at the Center. Specimens also came to the Center from a teaching collection formerly maintained by C. L. Hubbs at the Scripps Institution of Oceanography. Pinniped specimens came from a Center research program to assess the stocks of seals and sea lions in California. As the collection has grown, attempts have been made to broaden it through exchange of specimens with other institutions. It presently contains 110 specimens, of 38 species including dolphins, whales, porpoises, seals, sea lions, walrus, sea otter and manatee. It is used for comparative systematic studies, for identification of specimens and for teaching. The purpose of this catalog is to document the existence of the collection and the specimens in order to make them available to other investigators needing access to museum specimens of these large mammals that are so very difficult to collect, prepare, store and curate.

The catalog is organized taxonomically. The classification and common names follow Honacki, Kinman and Koepl (1982) and Perrin (1988). Each entry contains all or part of the following: Southwest Fisheries Center (SWFC) accession number, nature of specimen (skull, complete skeleton, baleen, etc.), sex, cranial maturity, physical maturity, body length (in cm), total weight, condylobasal length of the skull (in mm), collection date, collector's or other field and accession number(s), locality (including coordinates), circumstances of death (stranding, killed in tuna net, etc.), donor, and a list of other information, specimens and data relating to the specimen and kept at the SWFC. If the specimen has been referred to in the literature, a list of references is included (by number keyed to a reference list at the end of the catalog). Distal fusion of the premaxilla and maxilla was taken as an indication of cranial maturity in *Stenella* spp., *Delphinus*, *Tursiops*, *Lagenodelphis*, *Lissodelphis* and *Steno*. In other groups, degree of cranial maturity was judged based on closure of sutures, size of sagittal crest, weight of skull, ankylosis of the mandibular rami and other features. A specimen was considered physically mature if all vertebral epiphyses were fused to the centra.

Order CARNIVORA

Family Mustelidae

Enhydra lutris (Linnaeus, 1758) Sea otter

SWFC0096 - Skull; CB 121 mm, collected 25 May 1970 by C. H. Fiscus (WFP0572) at 51°50'N, 178°00'W, Tanaga Island, Aleutian Islands, Alaska.

Family Otariidae

Eumetopias jubatus (Schreber, 1776) Steller sea lion

SWFC098 - Skull; female, 179 cm, CB 270 mm, collected 25 March 1984 by B. W. Arnold (84-1606) at 57°56'N, 154°29'W. Killed in trawl. External measurements, blubber thickness.

SWFC099 - Skull; female, 137 cm, CB 229 mm, collected 21 June 1980 by J. R. Henderson (JRH0068) at 41°04'N, 124°08'W, Trinidad Harbor, California.

Zalophus californianus (Lesson, 1828) California sea lion

SWFC0102 - Skull; female, 174 cm, CB 227 mm, collected 6 February 1975 by W. F. Perrin (WFP0483) at 33°09'N, 117°21'W,

Carlsbad State Beach, California. Stranding. Published reference: 6.

SWFC0103 - Skull; female, 181 cm, CB 240 mm, collected 6 June 1981 by J. R. Henderson (JRH0154) at 32°35'N, 117°56'W, Imperial Beach, California. Stranding. Published reference: 4.

SWFC0108 - Skull (mandible missing); female, CB 218 mm, collected 7 June 1985 by J. B. Wexler (JBW0097) at 32°53'N, 118°31'W, San Clemente Island, California. Stranding.

Family Odobenidae

Odobenus rosmarus (Linnaeus, 1758) Walrus

SWFC0105 - Skull; CB 343 mm, collected in Alaska. No other data.

Family Phocidae

Mirounga angustirostris (Gill, 1866) Northern elephant seal

SWFC0097 - Skull; female, 234 cm, total weight 487 kg, CB 352 mm, collected 25 November 1953 by San Diego Zoo (WFP0235) at 29°11'N, 118°17'W, Guadalupe Island, Baja California, named "Christine". Died in captivity 5 December 1958.

Phoca vitulina Linnaeus, 1758 Harbor seal

SWFC0100 - Complete skeleton; female, physically immature, CB 194 mm, collected 20 June 1980 by J. R. Henderson (JRH0069) at 41°33'N, 124°05'W, mouth of Klamath River, California. Died in gill net.

SWFC0101 - Right mandible; collected 10 January 1974 by W. F. Perrin (WFP0306) at 32°54'N, 117°15'W, Torrey Pines State Beach, California. Stranding. Published reference: 6.

Order CETACEA

Suborder Odontoceti

Superfamily Platanistoidea

Family Pontoporiidae

Subfamily Pontoporiinae

Pontoporia blainvillei (Gervais and d'Orbigny, 1844) Franciscana

SWFC0083 - Skull; cranially adult, CB 419 mm, collected by A. Olivera (AO059) in Uruguay. Donated by R. L. Brownell, Jr.

Family Iniidae

Inia geoffrensis (de Blainville, 1817) Boto

SWFC0082 - Skull; male, cranially adult, 247 cm, CB 500 mm, collected by W. E. Evans (WEE0069) in Boa Vista Area, Roraima Region, Amazon Basin, Brazil.

Superfamily Delphinoidea

Family Monodontidae

Subfamily Delphinapterinae

Delphinapterus leucas (Pallas, 1776) White whale

SWFC0079 - Skull; cranially immature, CB 400 mm, collected 6 December 1921 by United States National Museum (238107). No other data.

Family Phocoenidae

Subfamily Phocoeninae

Phocoena phocoena (Linnaeus, 1758) Harbor porpoise

SWFC0066 - Skull; immature female, 132 cm, CB 270 mm, collected 22 May 1972 by K. Balcomb (KB162) at 47°08'N, 124°10'W, Iron Springs, Washington. Stranding.

Subfamily Phocoenoidinae

Phocoenoides dalli (True, 1855) Dall's porpoise

SWFC0064 - Skull; CB 325, collected before 1970 (WFP0624, WPPD01). No other data.

SWFC0065 - Complete skeleton (missing flippers and terminal caudal vertebrae); adult female, 204 cm, CB 346 mm, collected 22 March 1952 by C. L. Hubbs (WFP0241) at 32°51'N, 117°15'W, near Scripps Institution of Oceanography, La Jolla, California. Stranding.

Family Delphinidae

Subfamily Steninae

Steno bredanensis (Lesson, 1828) Rough-toothed dolphin

SWFC0063 - Complete skeleton; female, cranially adult, physically mature, 226 cm, total weight 112 kg, CB 531 mm, collected 21 September 1979 by R. C. Rasmussen (RCR0151) at 10°18'N, 088°27'W. Killed in tuna seine (Tuna/Porpoise Cruise 553). Photos, life history data, external measurements, organ weights, parasite data, X-rays of flippers and terminal caudal vertebrae, tracings of flippers and dorsal fin.

Subfamily Delphininae

Lagenorhynchus obscurus (Gray, 1828) Dusky dolphin

SWFC0061 - Skull; adult female, 188 cm, CB 376 mm, collected June 1967 by F. Robson at 39°29'S, 117°17'E, Cape Kidnappers, North Island, New Zealand. Donated by P. J. H. van Bree, Zoologisch Museum, Amsterdam (11.877).

Lagenorhynchus obliquidens Gill, 1865 Pacific white-sided dolphin

SWFC0057 - Skull; adult male, 217 cm, CB 401 mm, collected 25 April 1960 by C. L. Hubbs (WFP0239) at 32°51'N, 117°15'W, near Scripps Institution of Oceanography, La Jolla, California. Stranding. Life history data. Published reference: 16.

SWFC0058 - Complete skeleton (hyals missing); female, physically mature, 221 cm, total weight 147 kg, CB 403 mm, collected 25 August 1979 by M. W. Deerman (MWD0183) at 26°20'N, 113°43'W. Killed in tuna seine (Tuna/Porpoise Cruise 552). Photos, life history data, external measurements, parasite data, organ weights, x-rays of flippers and terminal caudal vertebrae. Published references: 16, 17.

Grampus griseus (G. Cuvier, 1812) Risso's dolphin

SWFC0077 - Complete skeleton; female, physically immature, 258 cm, total weight 240 kg, CB 450 mm, collected 13 February 1976 by R. W. Butler (RWB0034) at 04°03'S, 090°16'W. Killed in tuna seine (Tuna/Porpoise Cruise 149). Photos, life history data, external measurements, parasite data, organ weights, x-rays of flippers and terminal caudal vertebrae, tracings of dorsal fin and flippers.

Tursiops truncatu (Montagu, 1821) Bottlenose dolphin

SWFC0067 - Skull, various vertebrae; male, cranially adult, physically immature, 267 cm, total weight 215 kg, CB 488 mm, collected 27 June 1977 by J. R. Henderson (WFP0565) at 32°57'N, 117°16'W, Del Mar, California. Stranding. Photos, life history data, external measurements. Published references: 6, 15.

SWFC0068 - Skull, atlas; cranially adult, CB 544 mm, collected spring of 1969 by F. Hester (WFP0029) at 24°40'N, 111°51'W, Magdalena Bay, Baja California, Mexico. Found in fishermen's camp refuse dump. No other data. Published reference: 15.

SWFC0069 - Complete skeleton; female, cranially adult, physically immature, 250 cm, CB 517 mm, hybrid of Atlantic and Pacific bottlenose dolphins, born and died in captivity, named "Dawn", processed 14 August 1981 by L. J. Hansen (WAW0755). Donated by Marineland of the Pacific.

SWFC0070 - Complete skeleton; male, cranially adult, physically mature, 329 cm, total weight 400 kg, CB 521 mm, collected 1 June 1980 by J. R. Henderson (JRH0058) at 32°55'N, 117°15'W, Torrey Pines State Reserve, California. Stranding. Photos, life history data, external measurements, parasite data. Published reference: 6.

SWFC0071 - Complete skeleton; female, cranially adult, physically immature, 234 cm, total weight 149 kg, CB 473 mm, collected 16 May 1977 by J. R. Henderson (WFP0563) at 32°53'N, 117°15'W, Black's Beach, La Jolla, California. Stranding. Photos, life history data, external measurements. Published references: 6, 15.

SWFC0072 - Skull; male, cranially adult, 252 cm, CB 486 mm, collected 6 August 1977 by M. E. Hearne (MEH0019) at 09°42'N, 095°19'W. Killed in tuna seine (Tuna/Porpoise Cruise 274). Life history data. Published reference: 15.

SWFC0073 - Skull; male, cranially adult, 244 cm, CB 469 mm, collected 17 October 1975 by F. M. Ralston (FMR0081) at 07°53'N, 107°07'W. Killed in tuna seine (Tuna/Porpoise

Cruise 132). Photos, life history data, external head measurements. Published reference: 15.

SWFC0095 - Complete mounted skeleton; male, cranially adult, physically mature, 303 cm, total weight 325 kg, collected 5 February 1977 by W. F., C. F. and B. J. Perrin (WFP0559) at 32°53'N, 117°15'W, Black's Beach, La Jolla, California. Stranding. Photos, life history data, external measurements, organ weights. Published reference: 6, 15.

Stenella frontalis (G. Cuvier, 1829) Atlantic spotted dolphin

SWFC0055 - Skull (missing teeth and mandibles); cranially adult, CB 412 mm, collected July 1976 by N. E. Compton (FTI) at 34°23'N, 077°37'W, Topsail Island, North Carolina. Stranding. Donated by Fayetteville Technical Institute. Cranial measurements. Published reference: 13.

SWFC0056 - Skull; female, cranially adult, 208 cm, CB 449 mm, collected 3 April 1981 by R. A. Blaylock (RAB0030) at 36°55'N, 076°05'W, Lynhaven Beach, Virginia Beach, Virginia. Stranding. Photos (whole animal, skull, mandible), external and cranial measurements, parasite data. Published reference: 13.

Stenella attenuata (Gray, 1846) Pantropical spotted dolphin

SWFC0001 - Complete skeleton; male, cranially adult, physically mature, 211 cm, total weight 91 kg, CB 412 mm, collected 19 January 1978 by G. C. Feldman (GCF0006) at 05°56'S, 098°45'W. Killed in tuna seine (Tuna/Porpoise Cruise 348). Photos, life history data, external and cranial measurements, stomach contents summary, parasite data, organ weights.

SWFC0002 - Complete skeleton; male, cranially adult, physically immature, 200 cm, total weight 88 kg, CB 403 mm, collected 19 January 1978 by G. C. Feldman (GCF0007) at 05°56'S, 098°45'W. Killed in tuna seine (Tuna/Porpoise Cruise 348). Photos, life history data, external and cranial measurements, organ weights. Published reference: 13.

SWFC0003 - Complete skeleton; male, cranially adult, physically immature, 197 cm, total weight 75 kg, CB 384 mm, collected 19 January 1978 by G. C. Feldman (GCF0010) at 05°56'S, 098°45'W. Killed in tuna seine (Tuna/Porpoise Cruise 348). Photos, life history data, external and cranial measurements, organ weights. Published reference: 13.

SWFC0004 - Skull, atlas, left flipper bones; male, cranially adult, 204 cm, CB 395 mm, collected 18 July 1977 by M. A. Bairstow (MAB0005) at 07°46'N, 136°17'W. Killed in tuna seine (Tuna/Porpoise Cruise 272). Life history data, cranial measurements.

- SWFC0005 - Skull; female, cranially adult, 190 cm, CB 403 mm, collected 7 July 1981 by J. W. Gilpatrick, Jr. (JWG0057) at 08°16'N, 140°46'W. Killed in tuna seine (Tuna/Porpoise Cruise 702). Life history data, cranial measurements. Published references: 13.
- SWFC0006 - Skull, terminal caudal vertebrae; male, cranially adult, 191 cm, total weight 73 kg, CB 373 mm, collected 11 November 1979 by A. Bettge (AXB0023) at 08°42'N, 105°20'W. Killed in tuna seine (Tuna/Porpoise Cruise 555). Life history data, cranial measurements, parasite data, organ weights. Published reference: 13.
- SWFC0007 - Complete skeleton; female, cranially adult, physically mature, 240 cm, total weight 106 kg, CB 456 mm, collected 13 April 1979 by D. J. Trudeau (DJT0039) at 20°26'N, 106°32'W. Killed in tuna seine (Tuna/Porpoise Cruise 494). Photos, life history data, external and cranial measurements, parasite data, organ weights, X-rays of flippers and terminal caudal vertebrae. Published reference: 13.
- SWFC0008 - Complete skeleton; female, cranially adult, physically mature, 220 cm, total weight 88 kg, CB 447 mm, collected 13 April 1979 by D. J. Trudeau (DJT0040) at 20°26'N, 106°32'W. Killed in tuna seine (Tuna/Porpoise Cruise 494). Photos, life history data, external and cranial measurements, parasite data, organ weights, X-rays of flippers and terminal caudal vertebrae. Published reference: 13.
- SWFC0009 - Skull; female, cranially adult, 203 cm, total weight 80 kg, CB 440 mm, collected 13 April 1979 by D. J. Trudeau (DJT0042) at 20°26'N, 106°32'W. Killed in tuna seine (Tuna/Porpoise Cruise 494). Photos, life history data, external and cranial measurements, parasite data, organ weights, X-rays of flippers and terminal caudal vertebrae. Published reference: 13.
- SWFC0010 - Complete skeleton; female, cranially adult, physically immature, 203 cm, total weight 84 kg, CB 452 mm, collected 13 April 1979 by D. J. Trudeau (DJT0046) at 20°26'N, 106°32'W. Killed in tuna seine (Tuna/Porpoise Cruise 494). Photos, life history data, external and cranial measurements, parasite data, organ weights, X-rays of flippers and terminal caudal vertebrae. Published reference: 13.
- SWFC0011 - Skull; male, cranially adult, 224 cm, CB 415 mm, collected 13 April 1979 by T. C. Benton (TCB0036) at 18°18'N, 103°50'W. Killed in tuna seine (Tuna/Porpoise Cruise 488). Life history data, cranial measurements. Published reference: 13.
- SWFC0012 - Skull (fragmented); male, fetus, 70.5 cm, collected 5 May 1979 by J. E. Jose (JEJ0093) at 10°13'N, 091°34'W.

- Killed in tuna seine (Tuna/Porpoise Cruise 495). Life history data for mother (JEJ0061).
- SWFC0013 - Skull; male, fetus, 76.5 cm, total weight 4.2 kg, CB 201 mm, collected 14 November 1975 by D. B. Holts (DBH0767) at 09°58'N, 107°37'W. Killed in tuna seine (Tuna/Porpoise Cruise 133). Life history data for mother, external measurements.
- SWFC0014 - Skull; female, cranially adult, 181 cm, CB 386 mm, collected 22 January 1978 by S. F. Gleason (SFG0003) at 08°48'S, 089°21'W. Killed in tuna seine (Tuna/Porpoise Cruise 344). Life history data, external head and cranial measurements. Published reference: 13.
- SWFC0015 - Complete skeleton; female, cranially adult, physically immature, 173 cm, CB 394 mm, collected October 1966 by tuna fishermen (WPSG02, WFP0618) at 09°00'N, 092°00'W (position approximate). Killed in tuna seine. External and cranial measurements. Published references: 3, 12, 13.
- SWFC0016 - Complete skeleton (missing scapulae, flippers, atlas); cranially adult, physically immature, CB 412 mm, collected August 1969 by K. S. Norris (WFP0092, WPSA01, WFP0009) at 19°45'N, 156°04'W. Died at Oceanic Institute, Hawaii. Cranial measurements. Published references: 12, 13.
- SWFC0017 - Skull (left ramus missing), flippers, scapulae; female, 188 cm, CB 415 mm, collected November 1969 by tunaboat (WFP0007) at 09°30'N, 121°30'W (position approximate). Killed in tuna seine, recovered at cannery by California Department of Fish and Game. Life history data, external and cranial measurements. Published reference: 1.
- SWFC0018 - Complete skeleton; female, cranially adult, physically mature, 192 cm, CB 414 mm, collected 29 January 1978 by W. S. Lawton (WSL0018) at 08°53'S, 090°47'W. Killed in tuna seine (Tuna/Porpoise Cruise 345). Life history data, external and cranial measurements, organ weights, stomach contents summary, X-rays of flippers and terminal caudal vertebrae. Published reference: 12.

Stenella longirostris (Gray, 1828) Spinner dolphin

- SWFC0019 - Skull (tip of rostrum broken); male, fetus, 70 cm, CB 165 mm, collected 6 November 1975 by D. B. Holts (DBH0754) at 09°39'N, 106°17'W. Killed in tuna seine (Tuna/Porpoise Cruise 133). Life history data for mother.
- SWFC0020 - Skull; female, cranially adult, 176 cm, CB 398 mm, collected 18 January 1980 by B. G. Bargo (BGB0003) at 12°51'S, 083°21'W. Killed in tuna seine (Tuna/Porpoise Cruise 582). Life history data, external head and cranial measurements.

- SWFC0021 - Skull; male, cranially adult, 180 cm, CB 438 mm, collected 18 January 1980 by B. G. Bargo (BGB0004) at 12°51'S, 083°21'W. Killed in tuna seine (Tuna/Porpoise Cruise 582). Life history data, external head and cranial measurements.
- SWFC0022 - Skull; male, cranially adult, 173 cm, CB 395 mm, collected 18 January 1980 by B. G. Bargo (BGB0005) at 12°51'S, 083°21'W. Killed in tuna seine (Tuna/Porpoise Cruise 582). Life history data, external head and cranial measurements.
- SWFC0023 - Skull; male, cranially adult, 235 cm, CB 469 mm, collected 18 January 1980 by B. G. Bargo (BGB0008) at 12°51'S, 083°21'W. Killed in tuna seine (Tuna/Porpoise Cruise 582). Life history data, external head and cranial measurements.
- SWFC0024 - Skull; male, cranially adult, 186 cm, CB 403 mm, collected 28 February 1980 by B. G. Bargo (BGB0021) at 00°28'S, 099°53'W. Killed in tuna seine (Tuna/Porpoise Cruise 582). Life history data, external head and cranial measurements.
- SWFC0025 - Skull; male, cranially adult, 207 cm, CB 439 mm, collected 3 April 1975 by D. A. Bratton (DAB0100) at 14°19'N, 093°10'W. Killed in tuna seine (Tuna/Porpoise Cruise 100). Life history data, cranial measurements. Published reference: 14.
- SWFC0026 - Skull; female, cranially adult, 156 cm, CB 396 mm, collected 20 April 1968 by W. F. Perrin (CV245, WPSL01, WFP0620) at 07°20'N, 092°30'W. Killed in tuna seine (Tuna/Porpoise Cruise 3). External and cranial measurements. Published references: 1, 12, 14.
- SWFC0027 - Skull; male, cranially adult, 180 cm, CB 397 mm, collected 20 April 1968 by W. F. Perrin (CV240, WPSL03, WFP0622) at 07°20'N, 092°30'W. Killed in tuna seine (Tuna/Porpoise Cruise 3). External and cranial measurements. Published references: 1, 12, 14.
- SWFC0028 - Complete skeleton (missing flippers and terminal caudal vertebrae); male, cranially adult, physically immature, 177 cm, CB 434 mm, collected 22 April 1980 by K. S. Norris (WFP0605) at 19°45'N, 156°04'W, Kona, Hawaii. Died during tagging operations. Life history data, external and cranial measurements, parasite data, X-rays of flippers and terminal caudal vertebrae. Published reference: 14.
- SWFC0029 - Skull; male, cranially immature, 82 cm, CB 221 mm, collected 17 February 1976 by L. G. Preston (LGP0119) at 07°31'S, 087°11'W. Killed in tuna seine (Tuna/Porpoise Cruise 141). Photos, life history data, external

measurements, tooth counts, X-rays of flippers and terminal caudal vertebrae.

SWFC0030 - Complete skeleton (left flipper and scapula missing); male, cranially adult, physically mature, 172 cm, CB 427 mm, collected by Sea Life Park, Hawaii (WFP0606). Died in captivity 10 February 1980, named "Apiki". Life history data, some external measurements, cranial measurements. Published references: 11, 14.

SWFC0031 - Skull; cranially adult, CB 435 mm, collected by Sea Life Park, Hawaii (WFP0623, WPSR01). Died in captivity. Cranial measurements. Published references: 12, 14.

SWFC0032 - Skull (left mandible without teeth, right mandible missing); female, cranially adult, CB 448 mm, collected by Sea Life Park, Hawaii (WFP0669). Died in captivity May 1979, named "Maile". Cranial measurements. Published references: 11, 14.

SWFC0033 - Skull (left mandible without teeth, right mandible missing); female, cranially adult, CB 394 mm, born in captivity 9 August 1975 at Sea Life Park, Hawaii (WFP0670). Died May 1979, named "Pomaikai". Published reference: 11.

SWFC0034 - Skull (left mandible without teeth, right mandible missing); female, cranially adult, CB 418 mm, collected by Sea Life Park, Hawaii (WFP0671). Died in captivity January 1980, named "Mehealani". Published references: 11, 14.

SWFC0035 - Complete skeleton (mandible broken and cut); male, cranially adult, physically mature, 193 cm, CB 396 mm, collected 15 May 1981 by D. A. Ambrose (DAA170) at 02°55'N, 119°20'W. Killed in tuna seine (Tuna/Porpoise Cruise 706). Life history data, external and cranial measurements, X-rays of flippers and terminal caudal vertebrae.

Stenella coeruleoalba (Meyen, 1833) Striped dolphin

SWFC0050 - Complete skeleton (terminal caudal vertebrae missing); male, cranially adult, physically mature, 214 cm, total weight 102 kg, CB 422 mm, collected 15 August 1970 by C. Orange (WFP0050) at 10°41'N, 124°21'W. Killed in tuna seine. Photos, life history data, external measurements, tracings of dorsal fin, flippers, flukes. Published references: 7, 8.

SWFC0053 - Complete skeleton; female, cranially adult, physically mature, 201 cm, total weight 113 kg, CB 451 mm, collected 8 August 1978 by J. O. Crump (JOC0064) at 10°30'N, 131°18'W. Killed in tuna seine (Tuna/Porpoise Cruise 418). Photos, life history data, external measurements, tracings of dorsal fins and flukes.

SWFC0054 - Skull (most of mandibles missing); male, cranially adult, 180 cm, total weight 68 kg, CB 419 mm, collected 27 July 1977 by S. W. Johnson (SWJ0098) at 21°39'N, 117°27'W. Killed in tuna seine (Tuna/Porpoise Cruise 289). Photos, life history data, external measurements, X-rays of flippers and terminal caudal vertebrae.

Delphinus delphis Linnaeus, 1758 Common dolphin

- SWFC0036 - Skull; female, cranially adult, 205 cm, CB 427 mm, collected 4 June 1979 by R. M. Petty (RMP0011) at 11°18'N, 137°19'W. Killed in tuna seine (Tuna/Porpoise Cruise 511). Life history data, tracing of dorsal fin.
- SWFC0037 - Skull; female, cranially adult, 207 cm, CB 438 mm, collected 4 June 1979 by R. M. Petty (RMP0012) at 11°18'N, 137°19'W. Killed in tuna seine (Tuna/Porpoise Cruise 511). Life history data.
- SWFC0038 - Skull; male, cranially adult, 195 cm, CB 436 mm, collected 4 June 1979 by R. M. Petty (RMP0013) at 11°18'N, 137°19'W. Killed in tuna seine (Tuna/Porpoise Cruise 511). Life history data, parasite summary.
- SWFC0039 - Complete skeleton; male, cranially adult, physically mature, 231 cm, total weight 79 kg, CB 491 mm, collected 26 July 1979 by J. R. Henderson (JRH0049) at 32°57'N, 117°16'W, Del Mar, California. Stranding. Photos, life history data, external measurements, parasite data. Published reference: 6.
- SWFC0040 - Complete skeleton; male, cranially adult, physically mature, 190 cm, CB 419 mm, collected 29 July 1980 by J. R. Henderson (JRH0071) at 33°08'N, 117°20'W, Carlsbad State Beach, California. Stranding. Photos, life history data, external measurements, organ weights, parasite data. Published reference: 6.
- SWFC0041 - Skull; female, cranially adult, 176 cm, CB 422 mm, collected 30 December 1981 by J. E. Kurtenbach (JEK0034) at 02°31'S, 094°39'W. Killed in tuna seine (Tuna/Porpoise Cruise 766). Life history data, parasite data.
- SWFC0042 - Skull, atlas; female, cranially adult, 168 cm, CB 418 mm, collected 30 December 1981 by J. E. Kurtenbach (JEK0036) at 02°31'S, 094°39'W. Killed in tuna seine (Tuna/Porpoise Cruise 766). Life history data.
- SWFC0043 - Complete skeleton; female, cranially adult, physically mature, 205 cm, total weight 65 kg, CB 477 mm, collected 12 October 1983 by L. J. Hansen (LJH0121) at 32°39'N, 117°09'W, Coronado Island, Naval Amphibious Base, California. Stranding. Life history data, external measurements, parasite data.

SWFC0044 - Complete skeleton; female, cranially adult, physically mature, 176 cm, Total weight 54 kg, CB 409 mm, collected 11 May 1979 by P. Robards (WFP0595) at 33°02'N, 117°18'W, Moonlight Beach, Encinitas, California. Stranding. Photos, life history data, external measurements, parasite data, X-rays of flippers, photos of fetal bones found in vagina. Published reference: 1, 6.

SWFC0045 - Complete skeleton; male, cranially adult, physically mature, 175 cm, total weight 77 kg, CB 398 mm, collected 13 August 1980 by J. R. Henderson (JRH0074) at 32°42'N, 117°14'W, Bldg. 163, NOSC Submersible Center, San Diego, California. Stranding. Photos, life history data, external measurements, parasite data, organ weights. Published reference: 6.

SWFC0046 - Complete skeleton; female, cranially adult, physically immature, 166 cm, CB 413 mm, collected 18 March 1979 by J. R. Eckles (JRE0018) at 22°48'N, 109°14'W. Killed in tuna seine (Tuna/Porpoise Cruise 459). Life history data, external measurements, parasite data, X-rays of flippers and terminal caudal vertebrae, color pattern data.

SWFC0047 - Complete skeleton; female, cranially adult, physically mature, 194 cm, CB 385 mm, collected 18 March 1979 by J. R. Eckles (JRE0016) at 22°48'N, 109°14'W. Killed in tuna seine (Tuna/Porpoise Cruise 459). Life history data, external measurements, parasite data, X-rays of flippers and terminal caudal vertebrae, color pattern data.

SWFC0048 - Skull; male, cranially adult, 187 cm, CB 440 mm, collected 8 September 1966 by W. F. Perrin (WFP0236, WPDD01) at 32°52'N, 117°15'W, Scripps Pier, La Jolla, California. Stranding. Photos, external measurements. Published reference: 6.

SWFC0049 - Skull; female, cranially adult, CB 417 mm, processed by W. F. Perrin (WFP0649). Specimen used for observer training 13 August 1981, no other data.

SWFC0051 - Skull; female, cranially adult, 194 cm, CB 404 mm, collected 21 April 1977 by T. R. Kane (TRK0204) at 06°55'N, 080°40'W. Killed in tuna seine (Tuna/Porpoise Cruise 230). Life history and color pattern data.

SWFC0052 - Skull; female, cranially adult, 177 cm, CB 420 mm, collected 21 April 1977 by T. R. Kane (TRK0205) at 06°55'N, 080°40'W. Killed in tuna seine (Tuna/Porpoise Cruise 230). Life history and color pattern data.

Lagenodelphis hosei Fraser, 1956 Fraser's dolphin

SWFC0060 - Skull; female, cranially adult, 206 cm, CB 401 mm, collected 20 February 1976 by L. G. Preston (LGP0179) at

03°26'S, 091°41'W. Killed in tuna seine (Tuna/Porpoise Cruise 141). Photos of head, life history data, external measurements of head, parasite data.

Subfamily Lissodelphinae

Lissodelphis borealis Peale, 1848 Northern right whale dolphin

SWFC0062 - Complete skeleton; female, cranially adult, physically mature, 218 cm, total weight 67 kg, collected 13 June 1981 by J. R. Henderson (JRH0160) at 33°14'N, 117°25'W, mouth of Santa Margarita River, Camp Pendleton, California. Stranding. Photos, life history data, total weight 67 kg.

Subfamily Globicephalinae

Peponocephala electra (Gray, 1846) Melon-headed whale

SWFC0059 - Complete skeleton (hyals missing); female, physically immature, 195 cm, total weight 48 kg, CB 424 mm, collected by R. L. Brownell, Jr. (WFP0584) on Palau. Stranding. Photos, life history data, external measurements, parasite data, stomach contents summary, organ weights, tracings of dorsal fin, flippers, flukes.

Pseudorca crassidens (Owen, 1846) False killer whale

SWFC0076 - Skull (hyals missing); adult female, 414 cm, CB 631 cm, collected 10 October 1963 by Marineland of the Pacific (WAW0203) at 33°44'N 118°28'W, 4 miles west of Point Vicente, Palos Verdes Peninsula, California. Died in captivity 15 October 1968, named "Swiftly". Published references: 2, 5.

Orcinus orca (Linnaeus, 1758) Killer whale

SWFC0078 - Vertebrae (6), epiphyses (4); physically immature, seized by U. S. Customs at San Ysidro/Tijuana border crossing, loaned 6 October 1987 to W. F. Perrin (WFP0705) by U. S. Fish and Wildlife Service.

Globicephala macrorhynchus Gray, 1846 Short-finned pilot whale

SWFC0074 - Complete skeleton; female, physically mature, 463 cm, CB 625 mm, collected 19 December 1980 by J. R. Henderson (JRH0089) at 33°17'N, 118°18'W, southwest end of Santa

Catalina Island, California. Floating carcass. Photos, life history data, external measurements, parasite data.

SWFC0075 - Skull; immature female, 181 cm, CB 375 mm, collected 23 June 1977 by M. W. Deerman (MWD0080) at 09°45'N, 095°15'W. Killed in tuna seine (Tuna/Porpoise Cruise 263). Photos, life history data.

Superfamily Ziphiioidea

Family Ziphiidae

Mesoplodon hectori (Gray, 1871) Hector's beaked whale

SWFC0080 - Complete skeleton; male, physically immature, 245 cm, total weight 184 kg, CB 436 mm, collected 27 December 1979 by J. R. Henderson (JRH0052) at 32°55'N, 117°15'W, Torrey Pines State Reserve, California. Stranding. Photos, life history data, external measurements, parasite data, organ weights, X-rays of flippers. Published references: 6, 9, 10.

Mesoplodon sp.

SWFC0093 - Vertebra; collector unknown, collected Morro Bay Calif., December 1977D (WFP0686). Stranding.

Ziphius cavirostris G. Cuvier, 1823 Cuvier's beaked whale

SWFC0081 - Skull (mandibles and hyals missing); female or immature male, CB > 798 mm (tip of rostrum broken), seized by U. S. Customs at San Ysidro/Tijuana border crossing, loaned 6 October 1987 to W. F. Perrin (WFP0707) by U. S. Fish and Wildlife Service.

Superfamily Physeteroidea

Family Physeteridae

Subfamily Physeterinae

Physeter macrocephalus Linnaeus, 1758 Sperm whale

SWFC0085 - Teeth (7); collected 9 October 1987 (WFP0709 - WFP0715) at 05°02'N, 083°08'W. Salvaged from floating carcass.

Family Kogiidae

Kogia simus (Owen, 1866) Dwarf sperm whale

SWFC0084 - Complete skeleton; male, physically immature, 184 cm, total weight 192 kg, CB 256 mm, carcass donated 5 November 1979 to W. F. Perrin (WFP0598) by Smithsonian Institution, no collection data. Photos, external measurements, organ weights, parasite data.

Suborder Mysticeti

Family Balaenidae

Balaena mysticetus Linnaeus, 1758 Bowhead whale

SWFC0107 - Baleen plate; donated by Los Angeles County Museum. No collection data.

Family Eschrichtiidae

Eschrichtius robustus (Lilljeborg, 1861) Gray whale

SWFC0086 - Rib; female, 1290 cm, collected 23 April 1975 by W. F. Perrin (WFP0492) at 33°13'N, 117°24'W, Camp Pendleton, California. Stranding. Photos, life history data. Published reference: 6.

SWFC0087 - Baleen plates; male, 500 cm, collected 29 January 1985 by H. J. Bernard (HJB0009) at 33°13'N, 117°24'W, Camp Pendleton, California. Stranding. Photos, life history data, external measurements.

Family Balaenopteridae

Balaenoptera acutorostrata Lacepede, 1804 Minke whale

SWFC0089 - Baleen plates; male, 585 cm, collected 1 August 1988 by J. W. Gilpatrick (JWG0105) at 33°02'N, 117°18'W, Encinitas, California. Stranding. Photos, life history data, external measurements, parasite data.

Balaenoptera borealis Lesson, 1828 Sei whale

SWFC0088 - Baleen plate; no data.

Balaenoptera musculus (Linnaeus, 1758) Blue whale

SWFC0091 - Baleen plates; female, 1830 cm, collected 20 August 1984 by H. J. Bernard (HJB0002) at 33°02'N, 117°18'W, Encinitas, California. Stranding. Photos, life history data, fluke width.

SWFC0106 - Baleen plate; female, 2530 cm, collected 24 January 1948 at 64°41'S, 162°57'E. Whaling. Reproductive data, stomach contents, blubber thickness, coloration data.

Balaenoptera physalus (Linnaeus, 1758) Fin whale

SWFC0090 - Baleen plates; female, 1900 cm, collected 17 August 1983 by M. S. Lowry (MSL0295) at 32°36'N, 117°08'W, Imperial Beach, California. Stranding. Photos, life history data, external measurements, parasite data, tracing of dorsal fin.

Balaenoptera sp.

SWFC0092 - Scapula, epiphyses (2); 1450 cm, collected 30 May 86 by H. J. Bernard (HJB0033) at 33°04'N, 117°18'W, Leucadia State Beach, California. Stranding. Photos, life history data, dorsal fin trace.

Unidentified whale

SWFC0094 - Partial vertebral epiphysis; collected 9 June 1985 by W. F. Perrin (WFP0698) at 32°50'N, 118°23'W, Pyramid Cove, San Clemente Island, California.

Order SIRENIA

Family Trichechidae

Trichechus manatus, West Indian manatee

SWFC0104 - Complete skeleton (vertebral epiphyses missing); physically immature, CB 391 mm, donated by University of Florida (UF15124). No collection data.

PUBLISHED REFERENCES TO SPECIMENS

1. Benirschke, K., J. R. Henderson and J. C. Sweeney. 1984. A vaginal mass, containing fetal bones, in a common dolphin, *Delphinus delphis*. Rep. Int. Whal. Commn. (Spec. Iss.6):457-458.
2. Brown, D. H., D. K. Caldwell and M. C. Caldwell. 1966. Observations on the behavior of wild and captive false killer whales, with notes on associated behavior of other genera of captive delphinids. Los Angeles Co. Mus. Contri. Sci. 95, 32 p. (photos of live animal).
3. Dailey, M. D. and W. F. Perrin. 1973. Helminth parasites of porpoises of the genus *Stenella* in the eastern tropical Pacific, with descriptions of two new species: *Mastigonema stenellae* gen. et sp. n. (Nematoda: spiruroidea) and *Zalophotrema pacificum* sp. n. (Trematoda: digenea). Fish. Bull., U.S. 71(2):455-471.
4. Hansen, L. J. 1983. The Cooperative Marine Mammal Salvage Program: report on strandings of dead animals in 1981. SWFC Admin. Rep., La Jolla, LJ-83-03, 20 p.
5. Harrison, R. J., R. L. Brownell, Jr. and R. C. Boice. 1972. Reproduction and gonadal appearances in some odontocetes, pp. 361-429. In R. J. Harrison (ed.), Functional anatomy of marine mammals, vol. 1. Academic Press, London and New York.
6. Henderson, J. R. and L. J. Hansen. 1983. Stranded marine mammals recovered by the Southwest Fisheries Center 1966-1980. SWFC Admin. Rep., La Jolla, LJ-83-07, 31 p.
7. Hubbs, C. L., W. F. Perrin and K. C. Balcomb. 1973. *Stenella coeruleoalba* in the eastern and central tropical Pacific. J. Mamm. 54(2):549-552.
8. Mead, J. G. 1975. Anatomy of the external nasal passages and facial complex in the Delphinidae (Mammalia: Cetacea). Smithson. Contrib. Zool. 207, 72 p.
9. Mead, J. G. 1981. First records of *Mesoplodon hectori* from the northern hemisphere and a description of the adult male. J. Mamm. 62:430-432.
10. Mead, J. G. and A. N. Baker. 1987. Notes on the rare beaked whale, *Mesoplodon hectori* (Gray). J. Roy. Soc. N. Z. 17:303-312.

11. Myrick, Jr., A. C., E. W. Shallenberger, I. Kang and D. B. MacKay. 1984. Calibration of dental layers in seven captive Hawaiian spinner dolphins, *Stenella longirostris*, based on tetracycline labeling. *Fish. Bull.*, U.S. 82:207-225.
12. Perrin, W. F. 1975. Variation of spotted and spinner porpoise (genus *Stenella*) in the eastern tropical Pacific and Hawaii. *Bull. Scripps Inst. Oceanogr.* 21, 206 p.
13. Perrin, W. F., E. D. Mitchell, D. K. Caldwell, M. C. Caldwell, P. J. H. van Bree and W. H. Dawbin. 1987. Revision of the spotted dolphins, *Stenella* spp. *Mar. Mamm. Sci.* 3(2):99-170.
14. Perrin, W. F., N. Miyazaki and T Kasuya. In press. A dwarf form of the spinner dolphin (*Stenella longirostris*) from Thailand. *Mar. Mamm. Sci.*
15. Walker, W. A. 1981. Geographical variation in morphology and biology of bottlenose dolphins (*Tursiops*) in the eastern North Pacific. *SWFC Admin. Rep.*, La Jolla, LJ-81-03C, 54 p.
16. Walker, W. A., K. R. Goodrich, S. Leatherwood and R. K. Stroud. 1984. Population biology and ecology of the Pacific white-sided dolphin, *Lagenorhynchus obliquidens*, in the northeastern Pacific. Part II: Biology and geographical variation. *SWFC Admin. Rep.*, La Jolla, LJ-84-34C, 39 p.
17. Walker, W. A., S. Leatherwood, K. R. Goodrich, W. F. Perrin and R. K. Stroud. 1986. Geographical variation and biology of the Pacific white-sided dolphin, *Lagenorhynchus obliquidens*, in the north-eastern Pacific. In M. M. Bryden and R. Harrison (eds.), *Research on dolphins*. Oxford Univ. Press, Oxford.

OTHER REFERENCES

- Honacki, J. H., K. E. Kinman and J. W. Koepl (eds.). 1982. *Mammal species of the world: a taxonomic and geographic reference*. Allen Press, Inc. and The Association of Systematics Collections, Lawrence, Kansas. 694 p.
- Perrin, W. F. 1968. The porpoise and the tuna. *Sea Frontiers* 14(3):166-174.
- Perrin, W. F. 1988. Dolphins, porpoises, and whales - an action plan for the conservation of biological diversity: 1988-1992. International Union for Conservation of Nature and Natural Resources, Gland, Switzerland, 28 p.

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